ANNUAL REPORT 2013 - 2014

Innovation • Education • Quality • Assessment • Continual Improvement

Released October 2014

Clinical Microbiology Proficiency Testing

— Established 1982 —

ISO 9001:2008 Registration 2002

CMPT, Department of Pathology and Laboratory Medicine

The University of British Columbia

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ISO 9001:2008

Certified System ™

ISO 9001

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CMPT QUALITY POLICY AND MISSION STATEMENT

Innovation, Education, Quality Assessment, Continual Improvement

- We, at CMPT, are a university based, peer directed program, that provides Innovative External Quality Assessment for microbiology laboratories providing services for public and patient health.
- Our vision is to be recognized provincially, nationally, and internationally as a valued contributor of EQA innovation, education, and as passionate advocates for continued quality improvement in EQA for the benefit of healthcare, our participants, and our program.
- CMPT is committed to its Quality Management System, and regular review for continual improvement of its effectiveness.
- CMPT is committed to regulatory requirements of ISO 9001:2008.
- The CMPT Quality Policy is the framework for the regular establishment and review of quality objectives.
- CMPT is committed to regular review of the Quality Policy to ensure its suitability to the program.

Michael A. Noble, Chair
January, 2014

CMPT STAFF

The CMPT staff is committed to the highest standards of quality and professionalism. This dedicated team of administrative and technical staff provides support through all phases of the program.

Michael A. Noble, MD FRCPC ……..……..Chair and Managing Director
Esther Kwok, BSc, RT, CLQM ……Coordinator
Caleb Lee, MHA, BMLSc, CLQM ……...Head Technologist
Suhanya Bhuvanendran, BMLSc, CLQM …….. Technologist and Web Manager
Veronica Restelli, MSc ……..Editor

As a program in the Department of Pathology and Laboratory Medicine, University of British Columbia, CMPT acknowledges and greatly appreciates the on-going support of the following individuals.

Mike Allard, MD, FRCPC, Professor and Acting Department Head.

Sandy Liu, Director, Human Resources and Administration.

CMPT COMMUNICATIONS

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CHAIRMAN'S ANNUAL REPORT 2013 - 2014

CMPT Program

UBC's Clinical Microbiology Proficiency Testing program, now with 30 years of experience and expertise, has long benefited through its focus on quality, adaptation, and continual improvement. This past year, starting in 2013, has been one with much change. We can now look back with pride in our success.

CMPT Staff

As the chair and managing director of CMPT, I am so impressed with the skill, talent and effort of our staff. CMPT exists and is able to shine because of them. CMPT is a sum greater than its parts because of the commitment to our program of Esther Kwok, our coordinator, Caleb Lee, our senior technologist, Suhanya Bhuvanendran, technologist and web manager, and Veronica Restelli, our writer and editor and laboratory technologist. My hat is off to the whole group for pulling together.

CMPT location

In January of 2013, we were able to move from our location in the Heather Pavilion to a new site in the UBC Hospital on the campus of the University of British Columbia. We have now been in our new laboratory space for 20 months, and have become comfortable with its clear advantages. We have been able to take advantage of its better design to incorporate a reading space and outfit our containment room with a new biological safety cabinet.

Some additional space refinements will be implemented over the next year.

CMPT Volunteers

CMPT is grateful for all the support we receive from our committee members and chairs. Without the committee members, it would be impossible for us to maintain our challenge selection process, our assessment system, and the high quality of our critiques and newsletters.

As always CMPT recognizes the valuable role that our committee members contribute. We receive the benefit of their time, knowledge, and expertise. All is appreciated.

Last year's new committee members are active and enhance discussion of the group. In the next year we anticipate an additional new member. Dr. David Haldane has taken charge as our new Clinical Bacteriology committee chair.

Our renewal process will continue, but on a more regular basis, keeping in mind the importance of maintaining the right balance between experience and fresh ideas.

Quality Management and ISO Certification.

Once again, CMPT was successfully audited by SAI Global, and we maintained our certification to ISO 9001:2008. CMPT recently considered having an evaluation through Excellence Canada (see CMPT Goals), but upon further investigation has elected to not follow through.

It is in CMPT's interest to continue demonstrating our commitment to Quality through meeting the requirements of ISO9001, but to also to broaden our recognition.

During 2013-2014, CMPT has not worked with the CMPT Reliability Calculator as one of our measures for production Quality. We will re-evaluate if the calculator has generated useful information.

Internal Audit

Our formal internal audit was completed in April 2014. This year Esther Kwok led the process. The audit process was thorough and covered all elements of the standard. The audit found CMPT in compliance with approximately 98 percent of the standard. Two major internal weaknesses were found, including the absence of a written procedure for on-line data entry, and the absence of a New Employee Training Manual. These are being addressed.

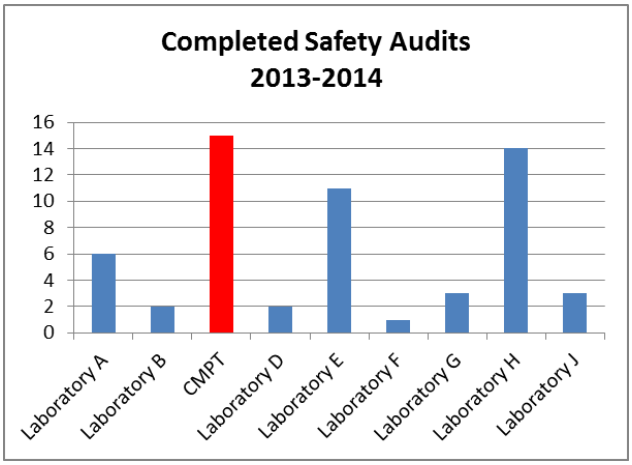
Opportunities for Improvement reported during 2013-2014

CMPT has maintained an ongoing OFI table since it was first registered. During the last year, 20 additional events were recorded. Without going into detail, several were due to slips or simple mistakes. The underlying factor for these was the very high levels of busyness through the year and the challenge of being a hands-on program where staff perform a variety of repetitive steps. Corrective actions were put into place resulting in improved protocols, which to date have prevented repeat errors.

Internal evaluation audits resulted in six preventive action processes being implemented.

Laboratory Safety

During the last 20 months, CMPT has formalized its safety processes significantly. Suhanya Bhuvanendran has agreed to serve as the CMPT Safety Officer. We have monthly safety audits that are recorded along with departmental peers using a CMPT developed on-line safety audit reporting tool for ease of completion, reporting, analysis, and referral.



Review of CMPT Quality System

As part of the annual review process of our Strategic Quality Plan (SQP), minor revisions were made to SQP001 (Quality Policy – Mission and Vision), which now includes the statement:

"*Our vision is to be recognized provincially, nationally, and internationally as a valued contributor of EQA innovation, education, and as passionate advocates for continued quality improvement in EQA for the benefit of healthcare our partners, and our program.*"

Additional clarifications were made to SQP005 (Personal Competence), SQP012 (Routine Challenges) – [improved definition of sample stability], SQP015 (Continual Improvement [better description of process], SQP018 (Internal Audit) [clarification of defined auditors], and SQP021 (Financial Responsibilities).

Management Review of CMPT Resources

CMPT relies on the revenues generated through cost recovery, personnel, and our site.

With respect to finances, CMPT has developed a successful financial plan and generated sufficient positive revenue to upgrade some of our essential equipment, including a centrifuge and the biological safety cabinet. Our annual review has indicated that as consolidation occurs, the number of laboratories participating in CMPT decreases. To off-set decreasing revenues our solutions have been to increase revenues from the provision of additional services.

Review of Continuing Education

CMPT is committed to providing opportunities for our staff to participate in education opportunities. During this year, we had the annual AMMI-Canada / CACMID meeting in Victoria, British Columbia. Veronica Restelli gave a presentation at the Quality Seminar.

Review of Programs

Proficiency Testing

EQA is the core activity of CMPT. The changing landscape of medical laboratories in terms of size, number, and activity has stimulated us to be ever vigilant for opportunities in EQA innovation, to which we have responded with increased variety of samples and programs.

International Training

CMPT has long recognized the importance of ensuring EQA proficiency based on realistic samples, not only in Canada, but also in developing regions around the world. Over the last decade we have provided educational PT training for delegates from more than 10 countries.

In 2013-2014, we had visitors from Turkey, Saudi Arabia, and Oman for PT training. This year we created an electronic survey to look at the opinions of those who had come to CMPT for training. See the section on satisfaction surveys below.

Proficiency Testing Assistance

CMPT regularly receives requests for use to provide benefit and experience to other programs. Some of this is provision of administrative expertise or provision of specialized samples that are stable and can travel for extended times and distances. CMPT views the landscape of EQA, both nationally and internationally, as an opportunity for collaboration for the betterment of healthcare and patient safety.

Appeals Requested - Clinical Bacteriology Surveys				
Year	Graded Challenges	Appeals	Support request	Affirm committee
2010-11	6067	15	6	9
2011-12	6726	13	2	11
2012-13	6325	12	4	8
2013-14	6300	17	6	11

CMPT Quality Indicators

Clinical Bacteriology Appeal Resolution

This year, CMPT had 6300 graded challenges in the Clinical Bacteriology surveys. CMPT received 17 requests for appeal to the committee assigned grade. This represented 0.27 percent of grades. Committee discussed all requests. Of the 17 appeals, 6 (35.3%) were resolved in support of the request.

Ungraded samples

Over the years, CMPT sample grading has become increasingly complex. Of 8618 challenges samples sent, 6300 (73.1%) were graded. The most common reason that a challenge is not graded is because the laboratory indicates that it does not process the type of sample presented (51.7%). Some challenges are ungraded because some discrete aspects of the sample results were difficult to evaluate. This year, there were 4 (12.5%) antimicrobial susceptibility challenges that were ungraded. Occasionally there is a quality control concern; we monitor this last group as a measure of our focus on providing quality samples. In 2013-1014, there were no rejected samples for Quality Control reasons.

Customer Satisfaction Surveys.

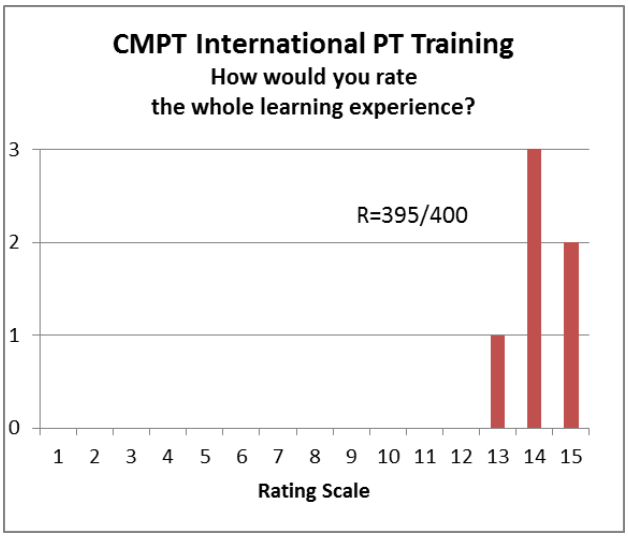
In 2013-2014, CMPT performed two satisfaction surveys; one was focused on our international training program and the other was on our website.

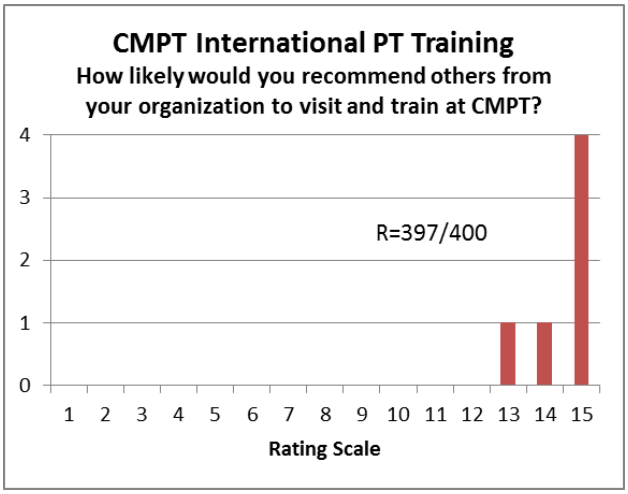
International Training in Proficiency Testing

Over the last 10 years, CMPT has provided training in proficiency testing for laboratorians interested in setting up proficiency testing programs in their own country. We contacted them to gather their collected opinions on their experience at CMPT.

Ungraded samples 2000 - 2014	
Year	Ungraded
2000-2001	0
2001-2002	3
2002-2003	3
2003-2004	3
2004-2005	3
2005-2006	3
2006-2007	4
2007-2008	3
2008-2009	1
2009-2010	2
2010-2011	0
2011-2012	0
2012-2013	3
2013-2014	0

Of the 24 people trained, many were no longer available for follow-up, however of those who visited over the last 6 years, 6 of 13 responded. While the group sample was small, the results of several questions were highly suggestive of trend.

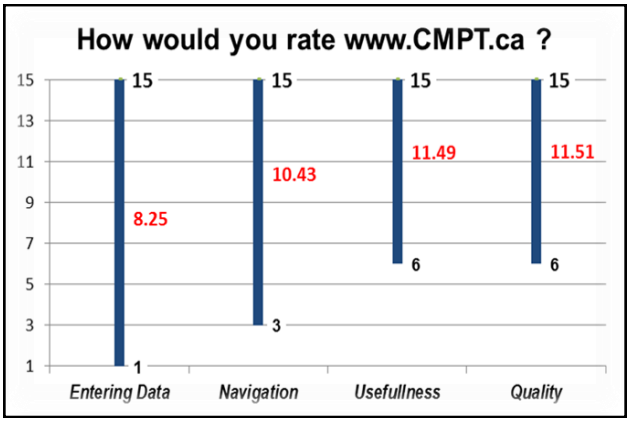




www.cmpt.ca

CMPT's website has grown dramatically since its early years as a small home-grown awareness centre. Today it is a content rich, high utilization site loaded with both current and archived critiques and newsletters, and is also the cornerstone access point for entering EQA information and challenge results.

In our survey, while 60 percent say that they visit and work at the site 3 or 4 times a year, an additional 36% access the website at least once or twice every month, while others visit the site at least once a week. Clearly the users' response is very important to us. On a rating scale from 0-15**, www.cmpt.ca** quality was rated 11.51 and its usefulness as 11.49. Ease of navigation was assessed at an average of 10.43. Of some concern to us was that the ease of Data Entry was rated only 8.25, lagging behind the other measures.



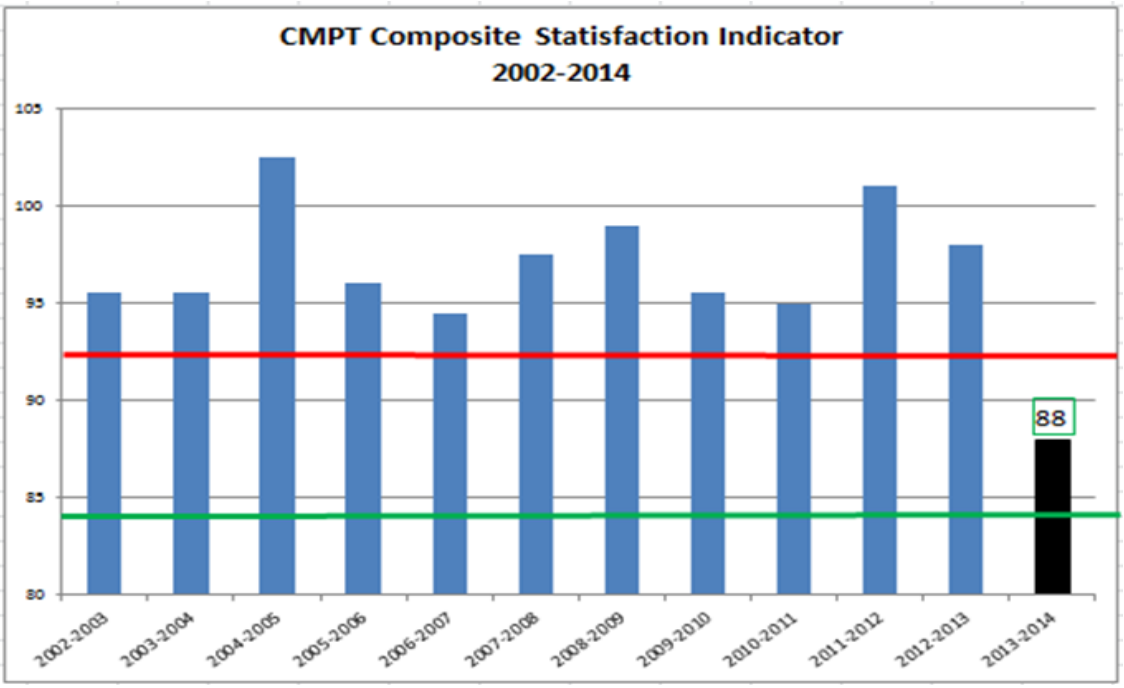
The challenges to data entry were not too surprising because it is not infrequently that we receive queries; some participants feel the data entry process is not typical of in-laboratory standard data entry. We have committed to address the problems some people have with data entry.

CMPT Composite Satisfaction Score (CSS)

Each year, CMPT combines the information from the surveys with other factors (contacts, complaints, consultations) and derives a weighted composite score Customer Satisfaction. In the weighting negative comments, lost contracts and complaints are weighted greater than positive counterparts. We have been monitoring this indicator for now 12 years. In 2013-2014, CMPT had new contracts and no complaints, however, as discussed, our survey on the website raised some concerns about navigation and ease of data entry. When these were added to our overall survey satisfaction with quality (84%), our CSS dropped to 88, which, while still within the acceptable range (97-84), represented a considerable stumble from previous scores.

CMPT Presentations and Publications

1. Quality and Safety: Two Sides of the Same Coin. Quality Management Conference for Medical Laboratories. Vancouver. October 2013
2. ISO 15189:2012 – Past, Present, and Future. Seeding Knowledge workshop. Jeddah Saudi Arabia. November 2013
3. Modern Proficiency Testing. Seeding Knowledge workshop. Jeddah Saudi Arabia. November 2013
4. Medical Laboratory Leadership. Seeding Knowledge workshop. Jeddah Saudi Arabia. November 2013
5. Risk Management in the Medical Laboratory: Reducing Risk through Application of Standards. Biomedical Standards Exchange. Singapore. November 2013.
6. Developing a Quality Implementation program for the Medical Laboratory. Excellence in Laboratory Quality Management. Riyadh Saudi Arabia. February 2014.
7. Counting the Costs of Poor Quality. Excellence in Laboratory Quality Management. Riyadh Saudi Arabia. February 2014.



8. Truer Counting of Error and Poor Quality Costs. AMMI-Canada CACMID Quality Seminar. Victoria BC. March 2014.
9. A Trending View of Proficiency Testing of Throat Swabs Cultures. AMMI-Canada CACMID Quality Seminar. Victoria BC. March 2014.
10. **Risk Management in the Medical Laboratory**: Reducing Risk through Application of Standards. CSMLS Annual Conference (Labcon) Saskatoon Sask. June 2014
11. Clinical Impact of Quality Control (1). Bio-Rad Workshop. Hong Kong PR China. July 2014.
12. Clinical Impact of Quality Control (2). Bio-Rad Workshop. Beijing PR China. July 2014.
13. **Restelli V, Noble MA 2014.** Performance of Canadian clinical laboratories processing throat culture proficiency testing surveys", awaiting acceptance. Accreditation and Quality Assurance.
14. **Michael A Noble, Robert Martin**. **2014**. Editorial - Making Great Strides in Medical Laboratory Quality. African Journal for Laboratory Medicine. Accepted for Publication.

CMPT and Strategic Planning

CMPT continues to function consistently to its Mission and Vision statements. Our long term objectives continue as iterated in our Vision statement (see above). In order to continue to meet our expectations, the following issues need to be addressed over the shorter term: workload, financial resources, space, sample supply chain, partnerships, research, and committee structure.

Workload

While there have been some decreases in laboratory participants, this has not reduced workload. CMPT continues to be very busy maintaining existing programs, working on research and development, and focusing on our quality needs and expectations. Some of our programs have become more complex, in particular antibiotic susceptibility testing. Strategies are in place to make this more straightforward, without reducing the value and effectiveness of the quality assessment program.

Financial resources

As the number of laboratories in many provinces continues to consolidate, the number of laboratories participating in CMPT Clinical Bacteriology

program continues to reduce. This is particularly true of the Category C and C1 laboratories. This issue has some impact of the financial stability of CMPT.

Through good fiscal management and the efforts of all our staff, we have been able to control this and indeed eliminate a deficit. This has been done without requiring a substantial increase in our program rates, by creating new programs, and by developing other revenue streams. We recognize that we cannot control laboratory consolidation. It is important that we continue to be recognized as an added-value program provincially, nationally, and internationally.

Space

Having made our move to UBC campus, we have found marked improvements in terms of both the efficiency and effectiveness of the new space. Importantly, we have found the physical proximity to the Department of Pathology and Laboratory Medicine and UBC Risk Management offices much more effective for communication.

Equipment

With increasing financial stability, CMPT has been making strides in improving our equipment. Last year we were able to purchase a new dedicated Biological Safety Cabinet and centrifuge. During the next year, we will focus on improving our photographic capabilities to improve both communication and documentation.

Enteric sample suppliers

All EQA programs across North America, and increasingly in Europe, have had difficulties in finding sufficient samples to provide enteric parasite assessments. Some have found a solution by using circulated photographs.

CMPT has worked hard at maintaining its program based on true samples. As long as current technologies of enteric parasite analysis depend on the use of the microscope, it is not possible for CMPT to focus R&D on developing simulated samples. In the meantime, we continue to appreciate the support of those laboratories that are able to provide us with true anonymized samples from patients, including both samples known to be positive and those known to be negative.

This year, we have found an additional laboratory prepared to assist us with providing anonymous samples for quality assurance purposes, and we do have access to samples from an academic centre available at commercial rates. We continue to look nationally and internationally for additional resources.

Partnerships

CMPT currently benefits from its partnership with our sister programs, the Program Office for Laboratory Quality Management, and the Canadian Immunohistochemistry Quality Control program.

CMPT has developed new partner relationships with Canadian EQA Laboratories (CEQAL) and the One World Accuracy network, and with the Department of Global Health, University of Washington.

CMPT continues to meet and work with the international EQA community around the world.

Research

Over the years, CMPT has been able to engage in a continued program of internally funded research and development that has resulted in our being leaders in the production of clinically realistic challenge samples in bacteriology and toxin testing, mycology, water bacteriology. Lead by Caleb Lee, we have developed strategies that significantly extend the shelf and transport life of samples and developed more realistic sample simulations. These programs will continue.

Committee structure

CMPT is highly appreciative of all the people that so generously volunteer. Last year CMPT started on a program to change the membership in several of its committees. Committees with a long, stable membership provide great value in continuity of philosophy and style, but at the same time, can impede the introduction of newer and fresher ideas. The new committee members are making great contributions and their participation is much appreciated.

www.cmpt.ca and Publications

As previously mentioned, CMPT's website has become the program's primary communication centre for data entry, results, critiques and newsletters, and the annual report. Our recent satisfaction survey focused on the value of this site. The results were mentioned previously.

Of some interest, we note that many of the people who visit www.cmpt.ca do so only 3-4 times per year, mainly in conjunction with data entry or finding critiques. Non-members also visit result-

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ing in a very high number of page views. These are people, from around the world, interested in seeking our information. While these viewers do not increase our membership or our resources, they do increase our international recognition and prestige.

Our challenge critiques are valued highly for their quality, and for that, I thank all of our committee members who serve as writers as well as our editor who maintains the style and consistency.

The cornerstone of CMPT's value as a continuing education provider is its publications. While our CMPT critiques continue to thrive, we have some ground to make up with CMPT Connections and the Annual Report.

CMPT Connections is viewed by us as a program and science information sharing publication that can extend beyond our challenge critiques.

During the past year we have had presentations on our international visitors, including our international EQA trainees and Dr. Pei Wang, a visiting scientist from China. In addition Denise Sitter provided and excellent article vehicle on the importance of colony count in urine samples, and Suhanya Bhuvanendran provided two articles on laboratory safety.

GOALS and OBJECTIVES

As part of our Quality Management System, CMPT sets it goals and objectives for the upcoming year, as well as, reviews its success with the previous goals. Since our inception, we have only failed to meet one annual objective.

GOALS and OBJECTIVES 2013 - 2014

P13_1	Continue to increase Microbiology content in CMPT Connections.	Satisfactory - ongoing
P13_2	Maintain our fiscal status	Satisfactory - ongoing
P13_3	Purchase new centrifuge.	Completed
P13_4	Develop financial strategy for an additional staff member	Satisfactory - ongoing
P13-5	Increase awareness of all programs with the view to increase total participation rate by 5 percent	Satisfactory - ongoing
P13-6	Increase authorship within CMPT Connections.	Satisfactory - ongoing
P13-7	To develop a new format for the Annual Report with the goal to improve its perceived value.	Satisfactory - ongoing
Q13_1	Meet ISO 9001:2008 certification without non-conformances.	Completed
Q13_2	To start relationship with Excellence Canada seeking Bronze and Silver Level achievement before the end of 2015.	**Terminated**

CHAIRMAN'S ANNUAL REPORT 2013 - 2014

In 2013-2014, we made satisfactory progress with all goals and objectives set, with the exception of one.

Over the last several years, CMPT has been looking for opportunities to take our Quality to the "next level", and for that we have looked at two approaches, one being accreditation to ISO 17043:2010 (Conformity assessment -- General requirements for proficiency testing), the other recognition by Excellence Canada for business excellence. After a series with discussions, we have decided that as interesting and valuable the program by Excellence Canada may be, we are better served by focusing on our programmatic core. This year we will invite A2LA to visit and assess CMPT for accreditation to ISO 17043:2010.

GOALS and OBJECTIVES 2014 - 2015

P14_1	Begin revamp of **www.cmpt.ca** to improve data entry and navigation	
P14_2	Purchase new microscope photography apparatus to improve time and focus issues	
P14_3	Pursue new Antibiotic Resistance Screen program	
P14_4	Generate at least one manuscript preparation and publication	
Q14_1	Continue with ISO 9001:2008 certification with view to prepare for ISO 9001:2015	
Q14_2	Prepare for ISO 17043:2010 accreditation by American Association for Laboratory Accreditation (A2LA)	

Signed

Michael A Noble, Chair, CMPT

September 20, 2014.

COMMITTEE MEMBERS 2013 - 2014

Committee members volunteer their time and are essential for selecting challenges, assessing results, and producing the critiques. The efforts contributed by each committee member are critical to the function of CMPT and are very much appreciated.

Water Microbiology Program

Chris Enick, BSc ……..Exova, Surrey, BC

Mycology Program

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Romina Reyes MD FRCPC ……LifeLabs, Burnaby, BC
Jeff Fuller FCCM, (D) ……University of Alberta Hospital, Edmonton, AB

Enteric Parasitology Program

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Joan Tomblin, MD FRCPC ……..BC Biomedical Laboratories, Surrey, BC
Quantine Wong, BSc ……BCCDC/BCPHMRL, Vancouver, BC
Romina Reyes MD FRCPC ……LifeLabs, Burnaby, BC

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Beverley Borgford, ART ……..…Yorkton Regional Hospital, Yorkton, SK
Lorraine Campbell, MLT……...Calgary Laboratory Services, Calgary, AB
Wilson Chan, MD FRCPC D(ABMM)……...Calgary Laboratory Services, Calgary, AB
Deirdre Church, MD PhD FRCPC ……...Calgary Laboratory Services, Calgary, AB
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Vicki Krell, ART (CM) ……...Abbotsford Regional Hospital, Abbotsford, BC
Paul Levett PhD (D)ABMM FAAM ……Saskatchewan Disease Control Laboratory, Regina, SK
Beverley Miller, MLT ……..……....Calgary Laboratory Services, Calgary, AB
Diane Roscoe, MD FRCPC ……..……Vancouver General Hospital, Vancouver, BC
Denise Sitter, ART ……..……..Cadham Provincial Laboratory, Winnipeg, MB
Tammie Wilcox-Carrier, ART ……..Moncton Hospital, Moncton, NB
Titus Wong, MD ……..……..Vancouver General Hospital, Vancouver, BC
Lorraine Campbell, MLT ……..……Calgary Laboratory Services, Calgary, AB

CLINICAL BACTERIOLOGY PROGRAM

CMPT acknowledges, with appreciation, the valuable and essential advisory and technical support of the Clinical Bacteriology Advisory Committee.

Program Overview

Clinical bacteriology surveys are shipped 4 times per year. Each survey can consist in up to seven different types of samples depending on the category of the laboratory and the challenges to which they are subscribed.

Only category A laboratories receive all samples, category B, C, and C1 laboratories receive samples according to their capabilities.

For a more comprehensive Program Overview, please visit:

http://www.cmpt.ca/programs_clinbact/clin_bacteriology_overview_program.htm

Clinical Bacteriology program 2013 - 2014

In 2013 - 2014, **109** laboratories participated in the clinical bacteriology program, **82** in the Supplemental Gram Smear program, and **87** in the *Clostridium difficile* program.

HISTOGRAMS 2013 - 2014

About the histograms

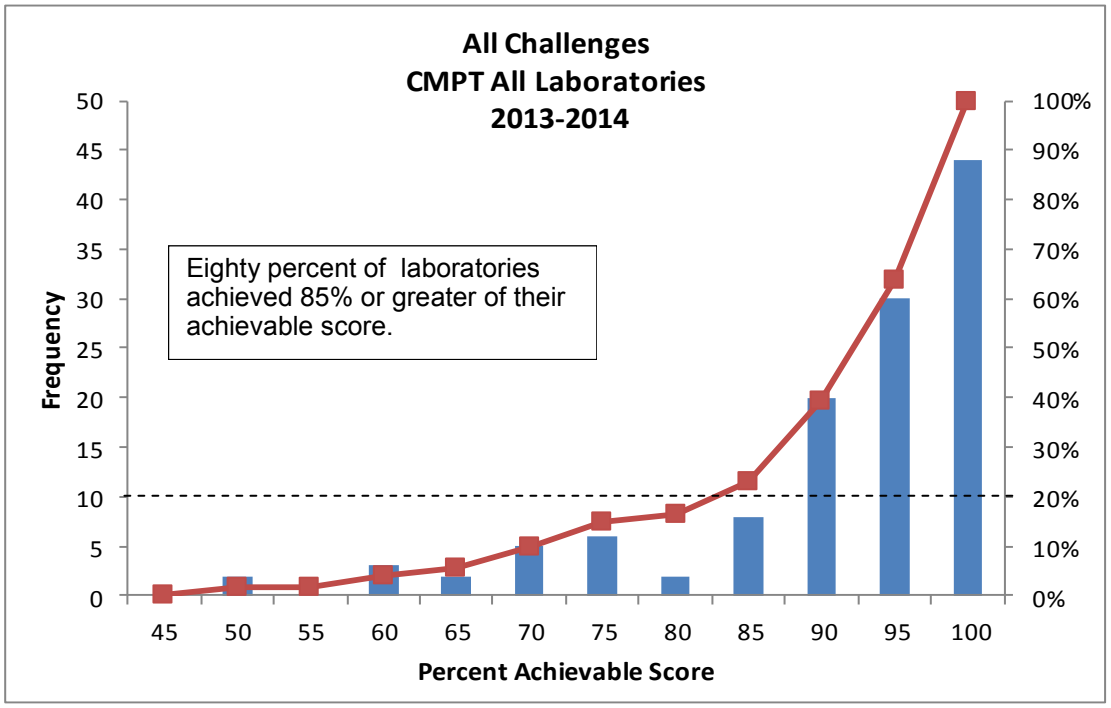
All histograms have been converted to a single format, which is the percent achievable score. For each laboratory, the sum of all challenges performed and graded was calculated, either as a total for all challenges, or within a specific category, such as “bacterial identification”. The total achievable score, that is the score the laboratory would have obtained if they received a grade of 4/4 for each graded challenge was calculated. Challenges that were ungraded were excluded. The percent achievable score was calculated as (total achieved score/total achievable score) X100.

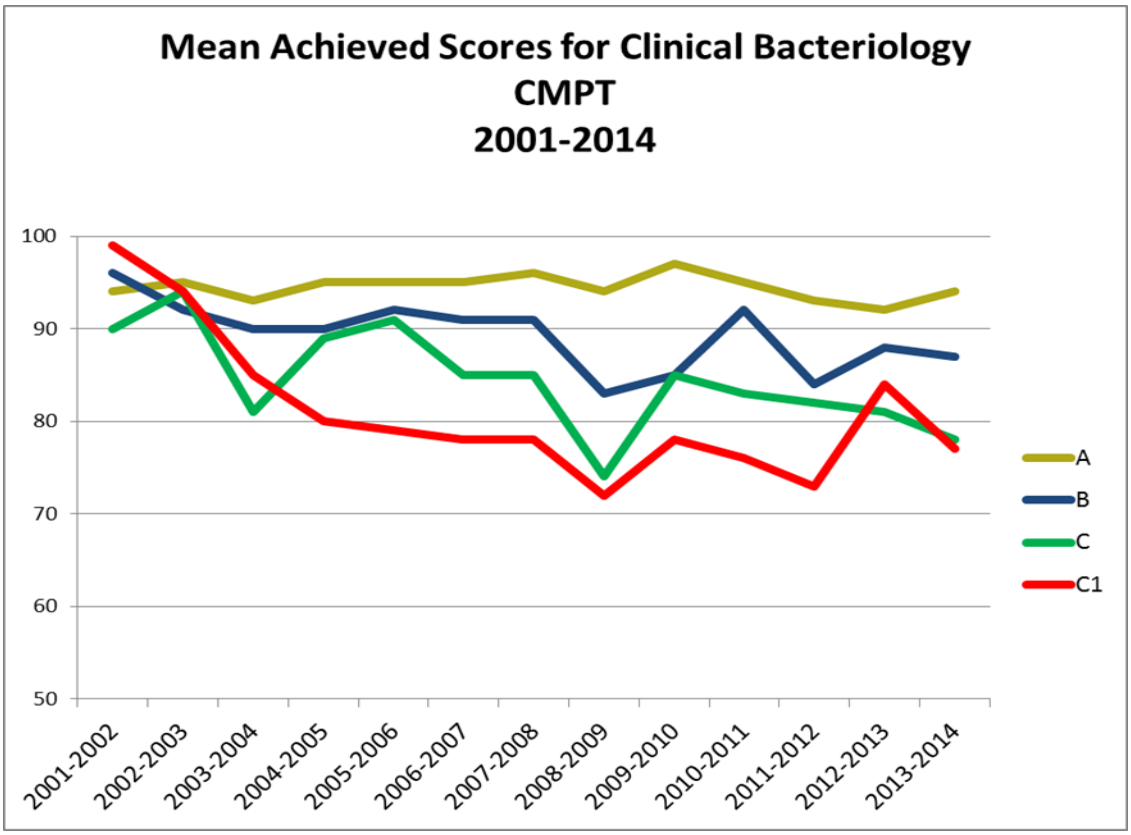
How to read the histograms

The number of laboratories getting a specific grade is indicated by the height of the columns over the Percent Achievable Score, and is read on the LEFT side scale of the chart.

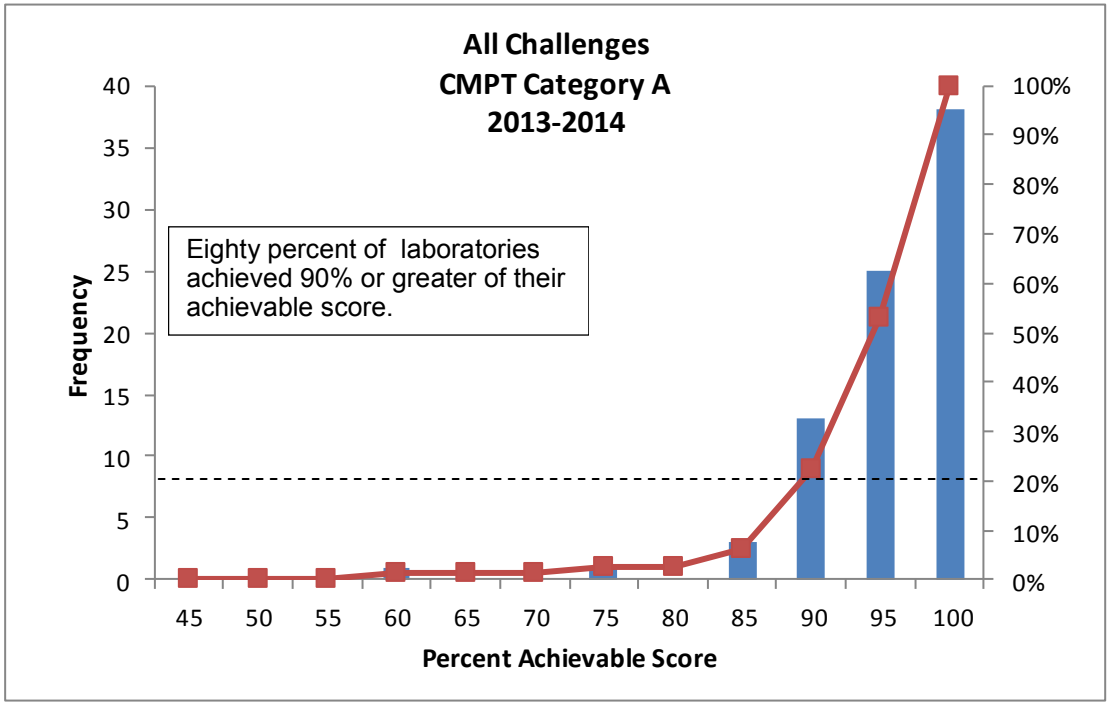
The Cumulative Scoring is indicated by the connected box-line that starts low on the left and rises to the right, and is read on the RIGHT side scale of the chart. The cumulative column indicates that percentage of laboratories that received an acceptable grade on the challenge.

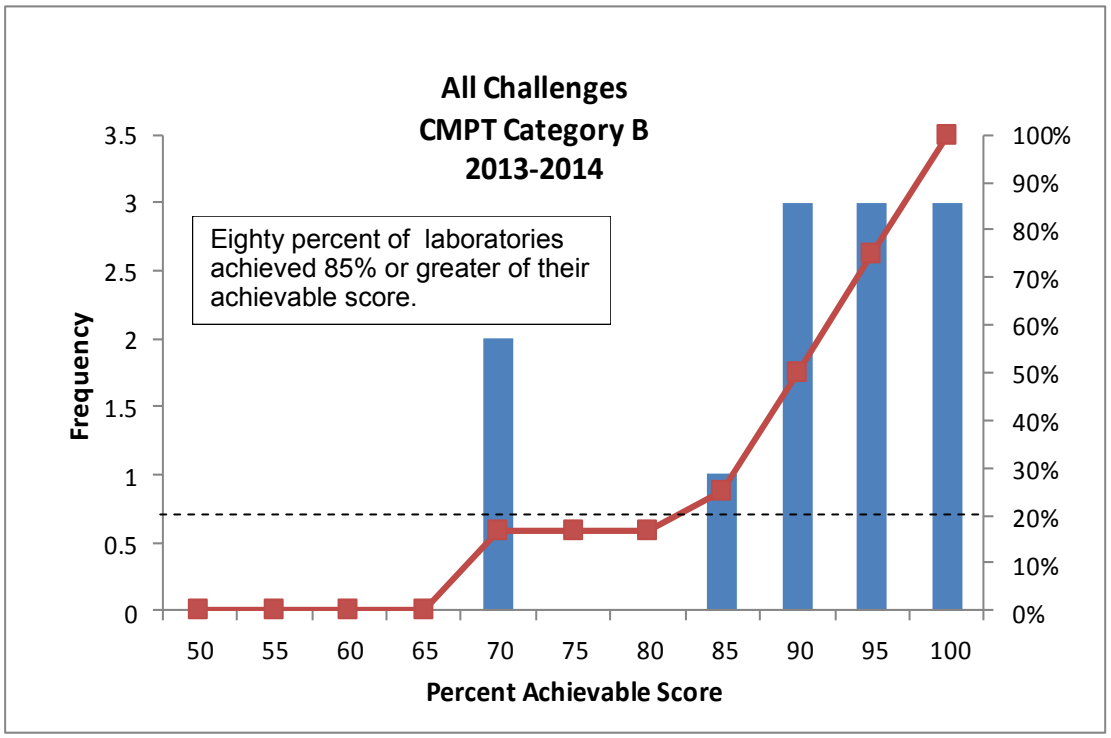
Clinical Bacteriology - All Challenges - All Laboratories



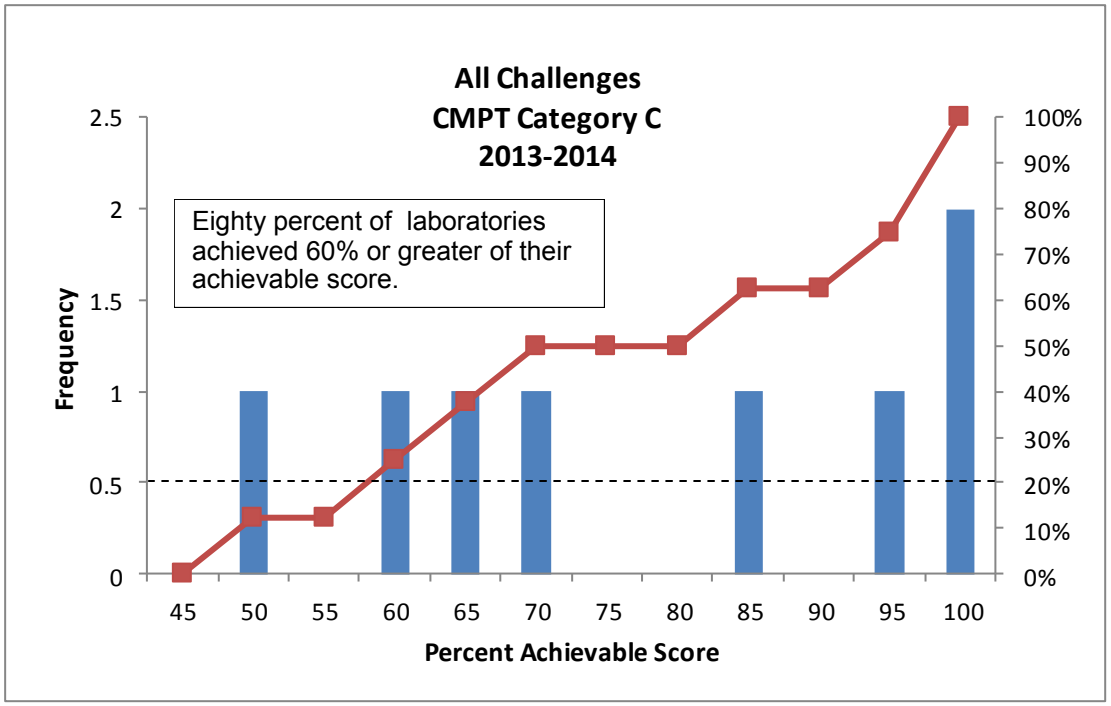


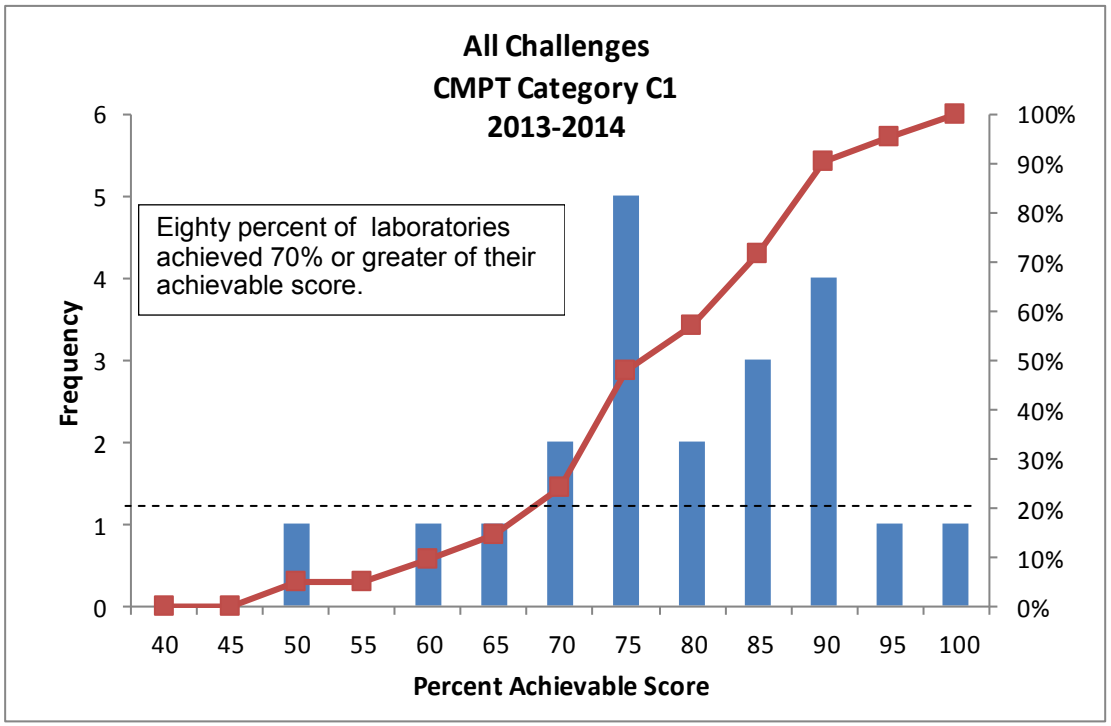
Clinical Bacteriology - Category A and B Laboratories



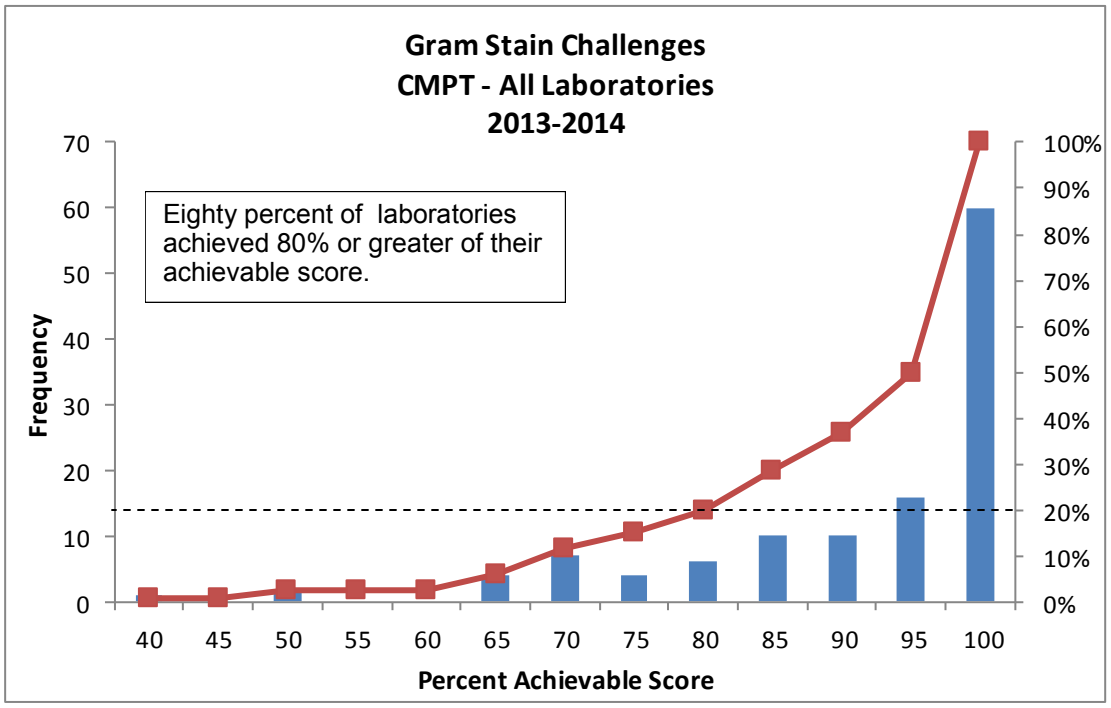


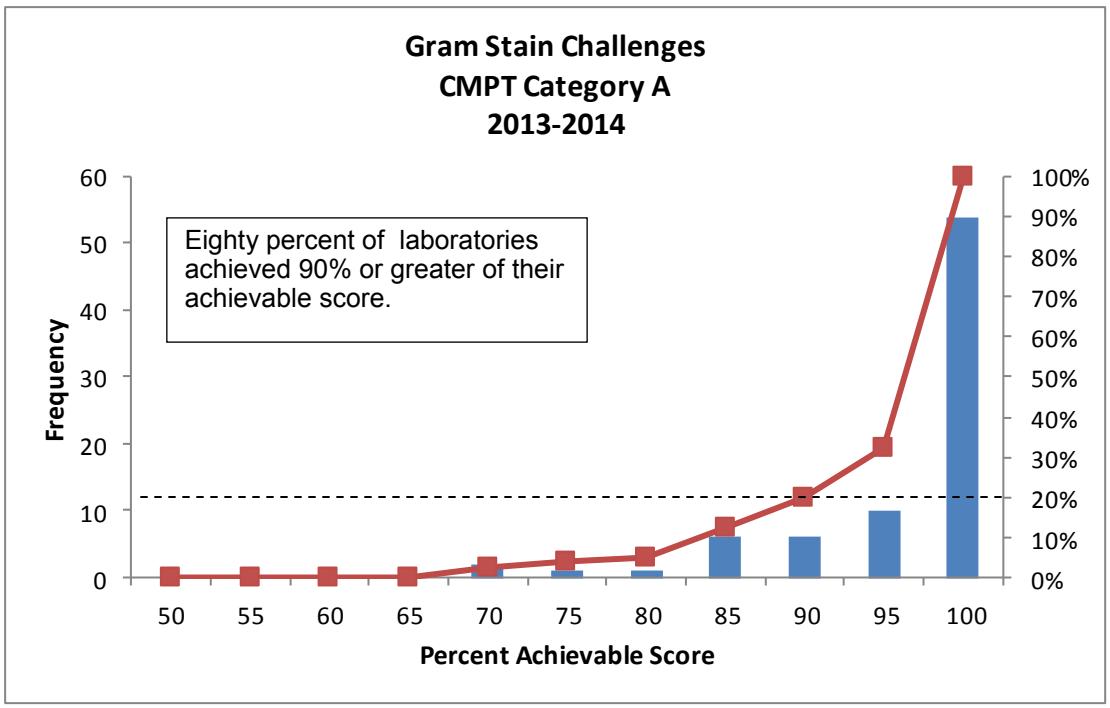
Clinical Bacteriology - Category C and C1 Laboratories





Gram Stain Challenges





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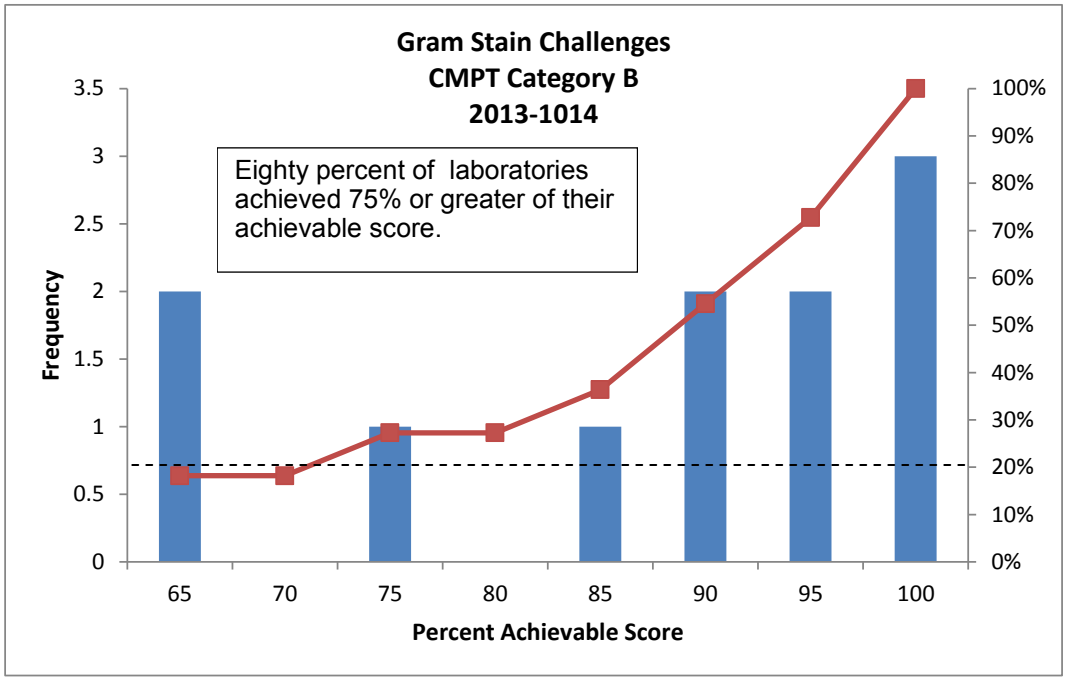
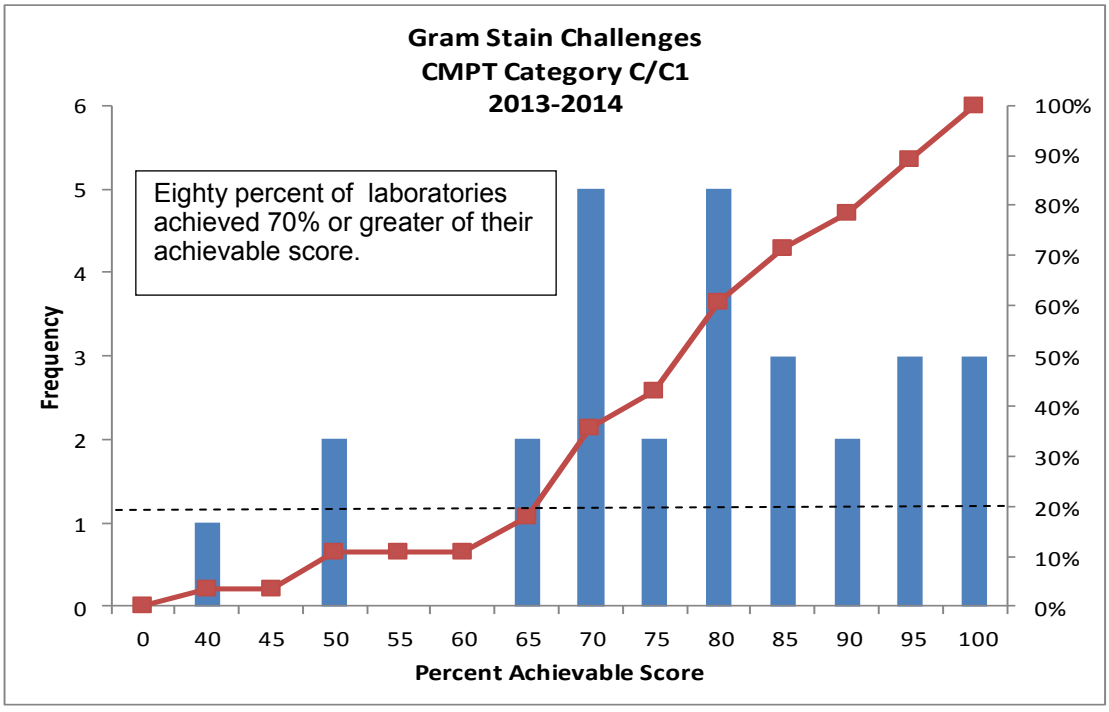
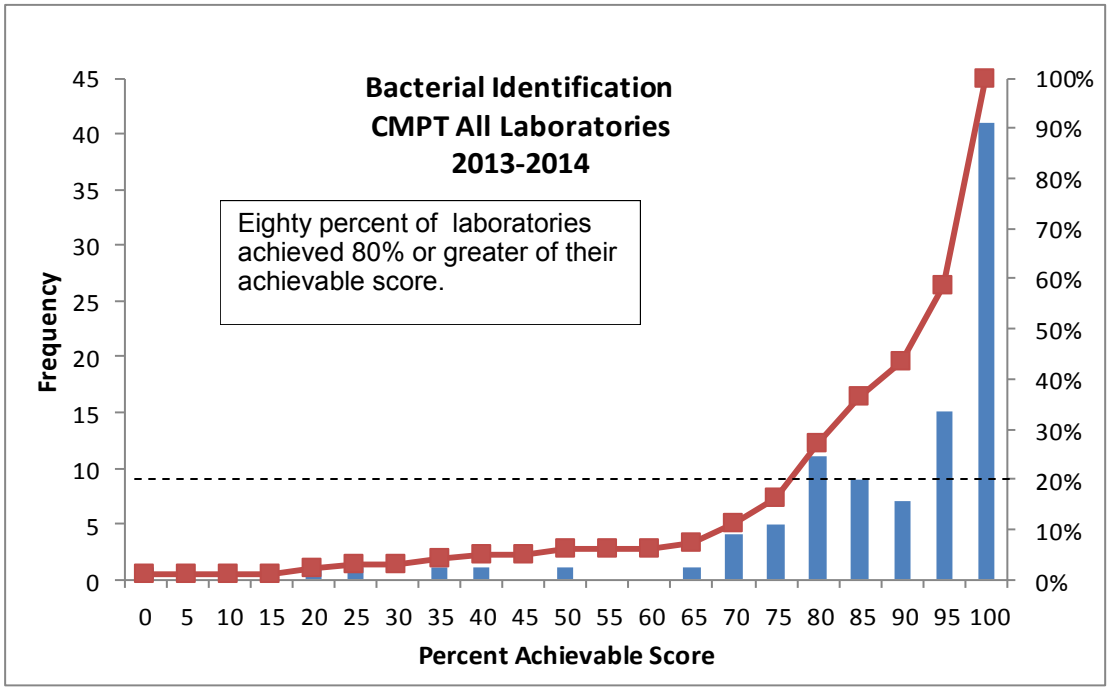
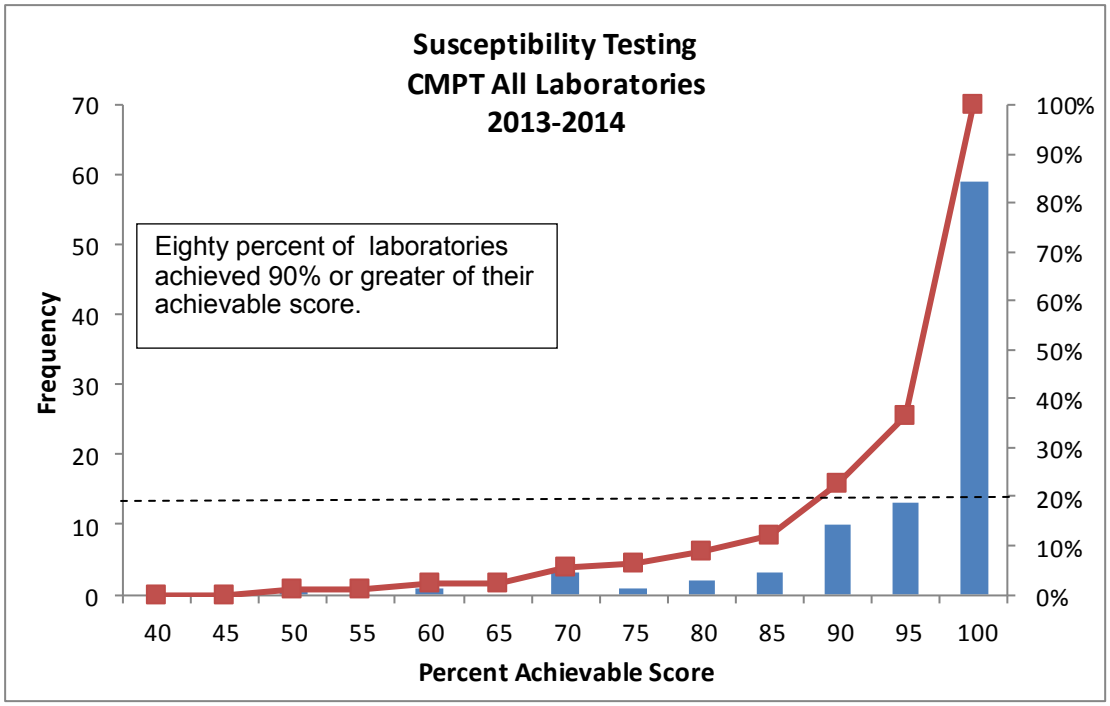




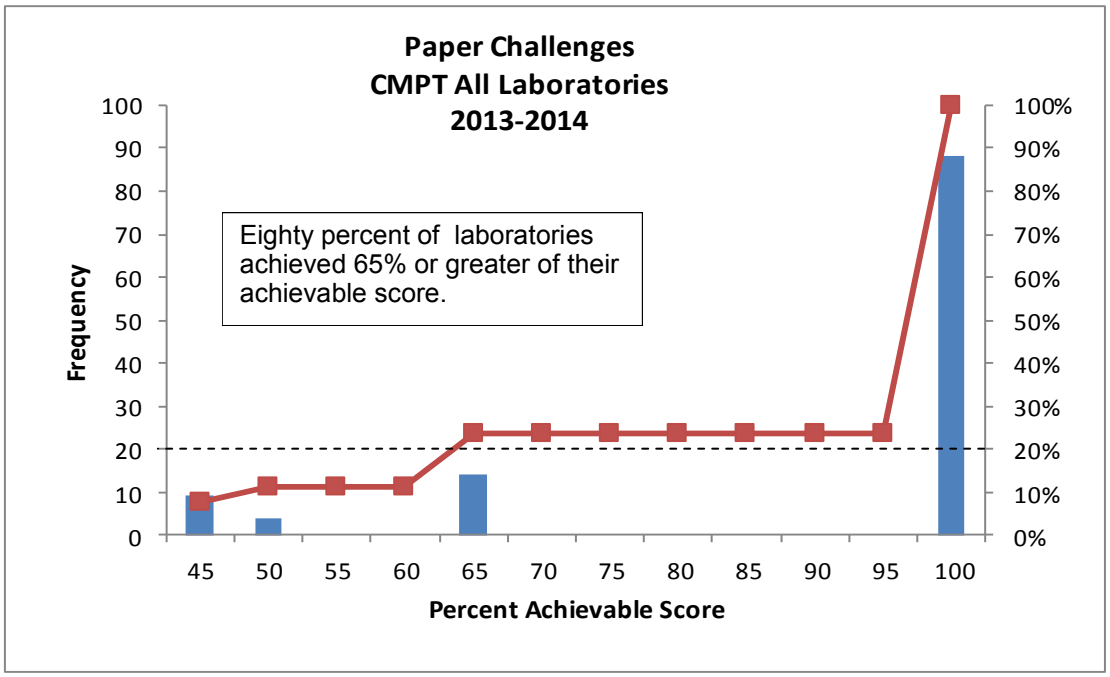
Identification Challenges

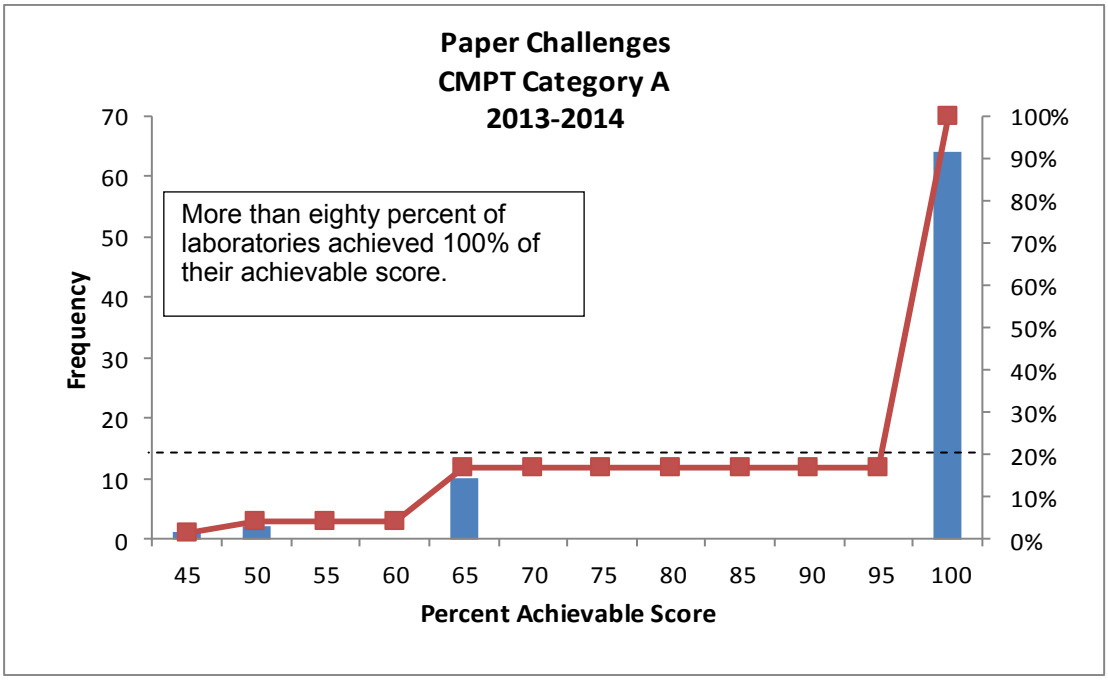


Susceptibility Challenges

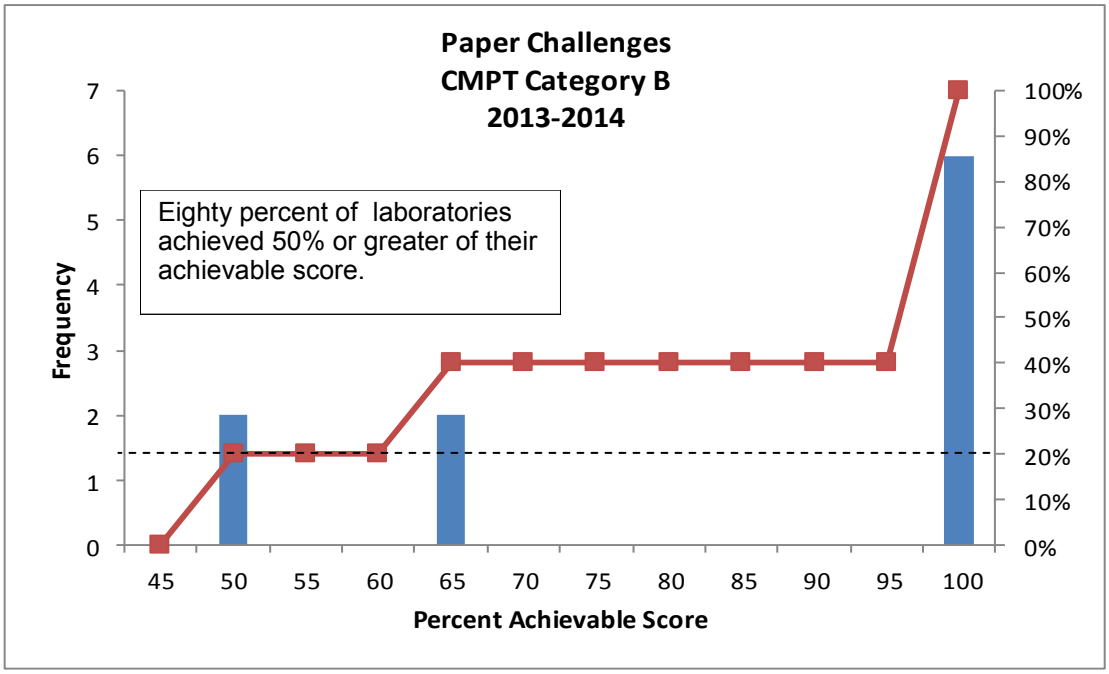


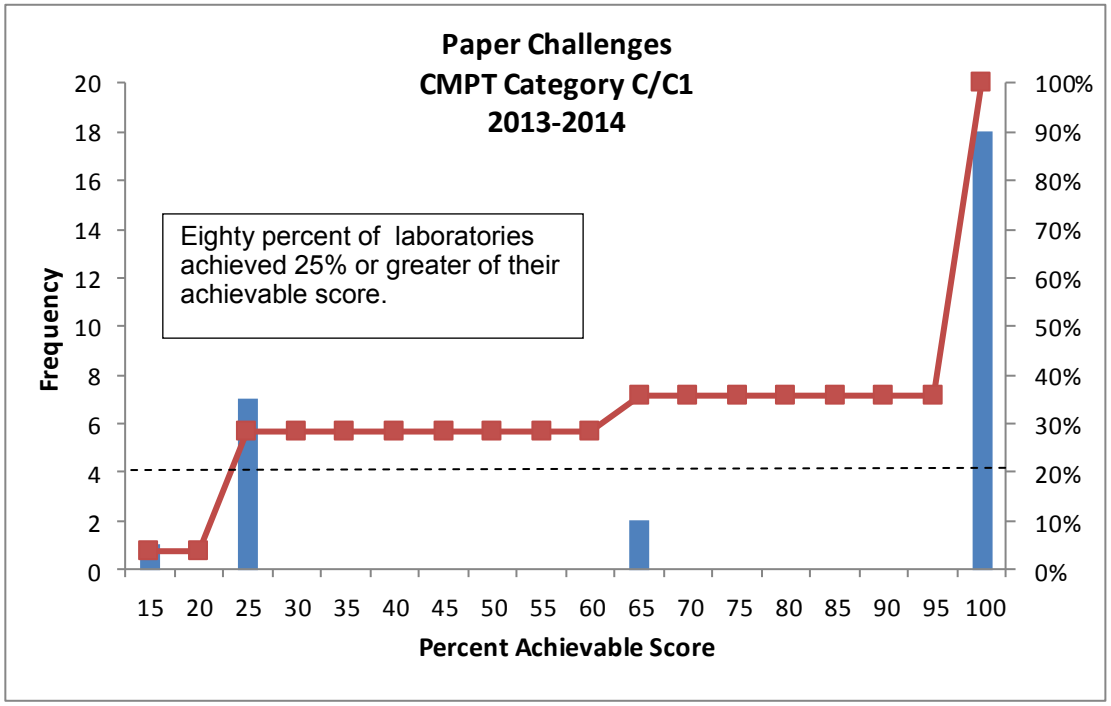
Paper Challenges



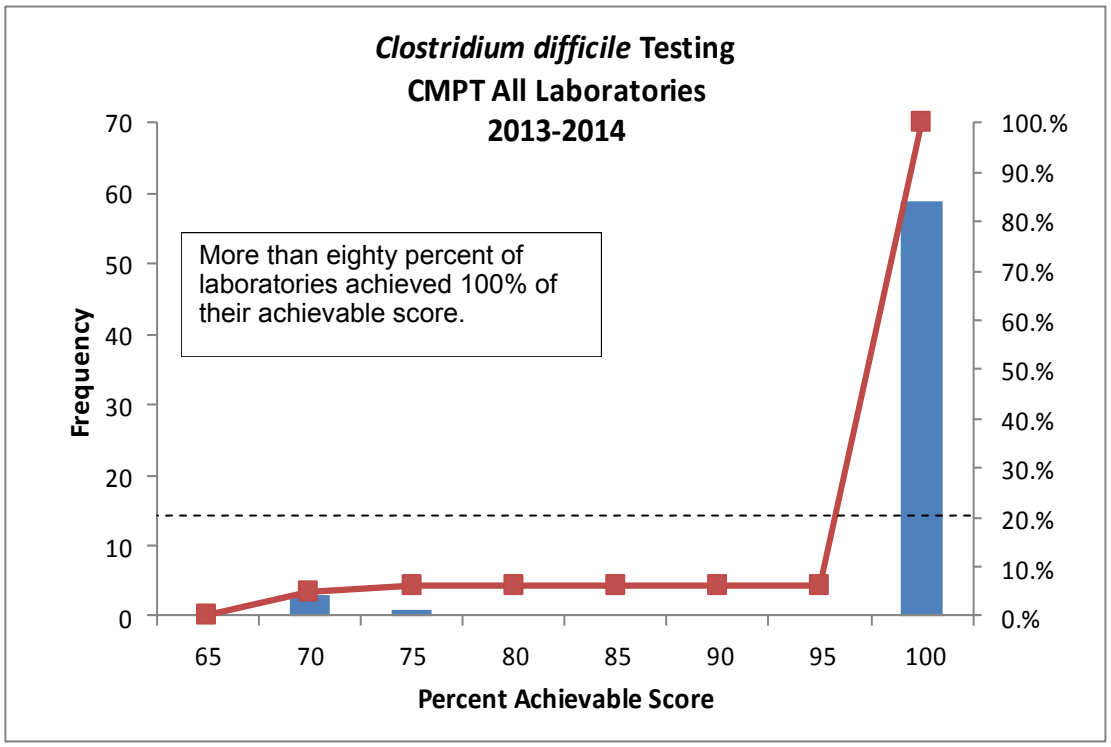


Paper Challenges





Clostridium difficile Toxin Detection - All Laboratories



WATER MICROBIOLOGY PROGRAM

CMPT acknowledges with appreciation the valuable and essential advisory and technical support of:

Chris Enick BSc…….Exova, Surrey, BC

CMPT participates with the following organizations to provide external quality assessment challenges and assistance for water bacteriology.

- Enhanced Water Quality Assurance (British Columbia Water Bacteriology Approval Committee)
- BCCDC Environmental Microbiology Laboratory
- British Columbia Ministry of the Environment

In 2013, forty-five laboratories participated in the water bacteriology program. Drinking Water challenge surveys are shipped to laboratories three times per year. Each survey consists of sets of 4 drinking water samples. Recreational Water challenge surveys are shipped two times per year. Each survey consists of one set of recreational water samples (spa water, freshwater beach or marine water). Participants participate in one, two or all the recreational challenge samples.

Not all laboratories perform all challenges and not all laboratories use the same methods when testing water samples. Laboratories perform testing use one to four methods depending on the laboratory's accreditation criteria. Laboratories also perform a qualitative method, the Presence/Absence method, as their primary method or in addition to the quantitative methods. The drinking water bacteriology (membrane filtration, Enzyme Substrate, MPN and Presence/Absence methods) challenge records for 2013 are shown in Table 1 and the recreational water challenge records are show in Table 1.

Table 1: Simulated drinking water bacteriology challenge record for 2013

Date	Sample No.	Organism	Membrane Filtration mean/median cfu/100 ml		Enzyme Substrate mean/median MPN/100 ml		MPN mean/median MPN/100 ml		Presence/ Absence (P/A)
			Total Coliforms	*E.coli*	Total Coliforms	*E.coli*	Total Coli-forms	*E.coli*	Total Coli-forms/ E.coli
W131 April 15 , 2013	1	*Enterobacter* species	22/19	0/0	18/19	0/0	13/13	0/0	P/A
	2	*Escherichia coli*	70/73	67/72	67/65	66/65	>23/>23	>23/>23	P/P
	3	*Enterobacter* species	38/38	0/0	36/37	0/0	>23/>23	0/0	P/A
	4	*Enterobacter* species	37/36	0/0	37/38	0/0	>23/>23	0/0	P/A
W132 July 8, 2013	1	*Escherichia coli*	18/19	17/18	20/19	19/19	20/23	18/23	P/P
	2	*Enterobacter* species	31/31	0/0	32/30	0/0	>23/>23	0/0	P/A
	3	*Escherichia coli*	33/34	32/34	34/32	33/32	>23/>23	>23/>23	P/P
	4	*Escherichia coli*	67/68	67/69	70/70	68/68	>23/>23	>23/>23	P/P
W133 October 28, 2013	1	*Escherichia coli*	27/28	26/27	30/29	28/29	20/23	20/23	P/P
	2	*Escherichia coli*	41/41	40/41	44/45	40/43	>23/>23	>23/>23	P/P
	3	no organisms	0/0	0/0	0/0	0/0	0/0	0/0	A/A
	4	*Enterobacter* species	14/15	0/0	15/16	0/0	12/12	0/0	P/A

P: presence; A: absence

Table 2: Simulated recreational water bacteriology challenge record for 2013

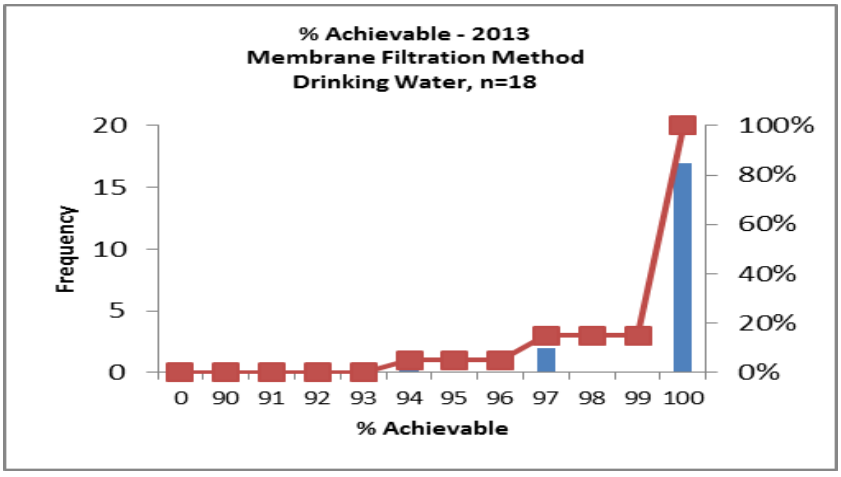
Date	Source	Challenge	Membrane Filtration mean/median cfu/100mL	Enzyme Substrate mean/median MPN/100 ml
R131 April 15, 2013	Spa Water	*Pseudomonas aeruginosa*	78/78	38/40
	Freshwater Beach	*Escherichia coli*	197/200	236/240
	Marine Water	*Enterococcus* species	110/110	90/102
R132 September 16, 2013	Spa Water	*Pseudomonas aeruginosa*	247/253	174/58
	Freshwater Beach	*Escherichia coli*	462/500	480/495
	Marine Water	*Enterococcus* species	273/273	296/310

Water Bacteriology (Drinking and Environmental Water Sample) Score

Laboratory testing results are graded based on the Membrane Filtration, Enzyme Substrate, MPN and/or Presence/Absence methods. All methods are graded on a point scale for assessment of water samples with the exception of the Presence/Absence method, a qualitative method and are, therefore, graded qualitatively. With 12 drinking water samples tested for the program year, the maximum score is 36. With 3 environmental water samples, laboratories can receive up to a maximum score of 9.

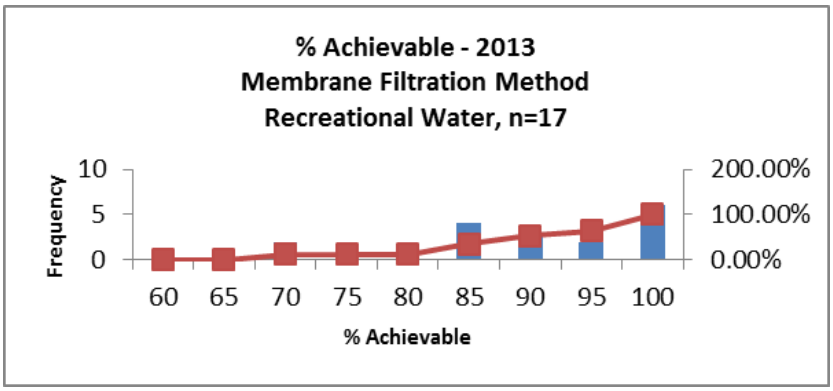
The following Score Tables illustrate the % Achievable scores for each method during 2013.

Membrane Filtration Method Score Table Drinking Water Testing Laboratories Performance for 2013		
% Achievable	**Labs (n=18)**	**% Cumulative**
94	1	5
97	2	15
100	17	100

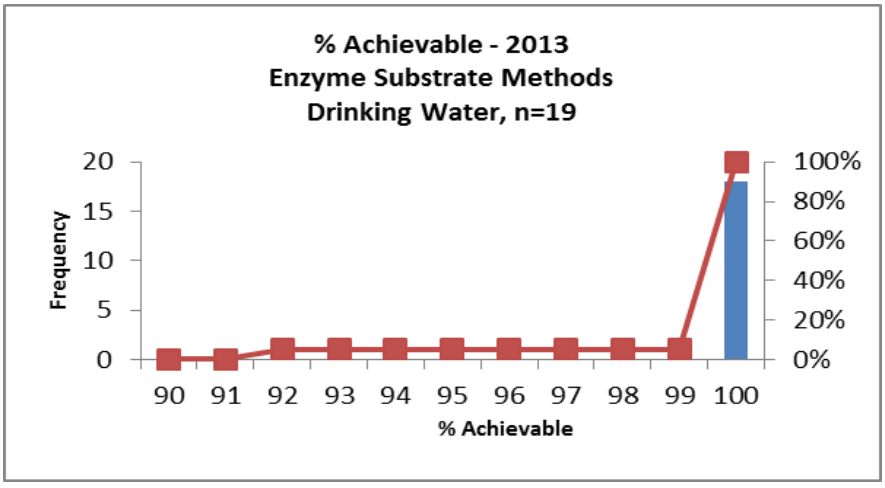


WATER MICROBIOLOGY PROGRAM

Membrane Filtration Method Score Table Recreational Water Testing Laboratories Performance for 2013		
% Achieva-ble	Labs (n=17)	% Cumulative
70	2	12
85	4	35
90	3	53
95	2	65
100	6	100

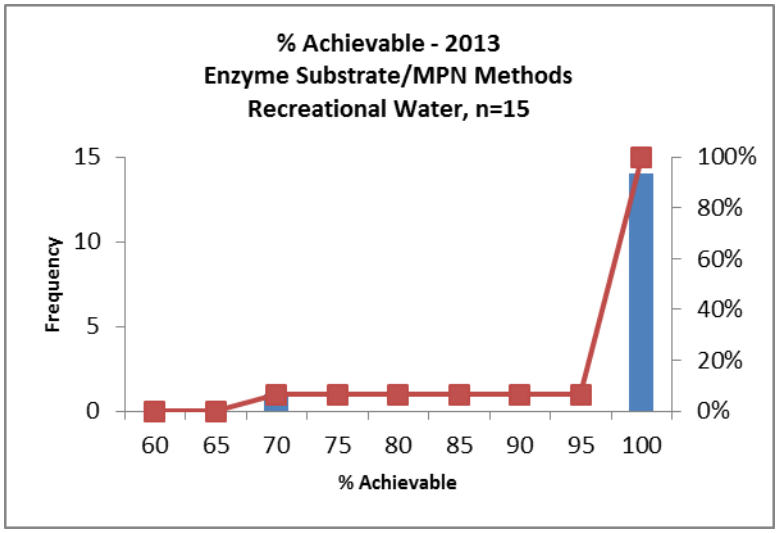


Enzyme Substrate Method Score Table. Drinking Water Testing Laboratories Performance for 2013		
% Achievable	Labs (n=19)	% Cumulative
100	19	100

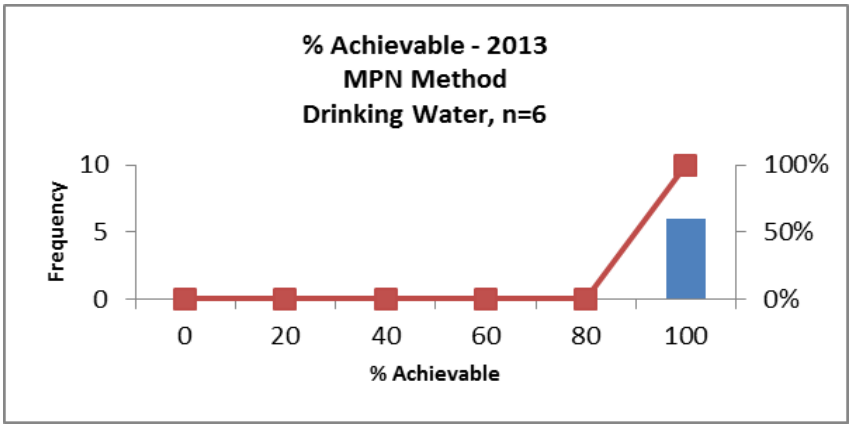


WATER MICROBIOLOGY PROGRAM

Enzyme Substrate/Most Probable Method (MPN) Score Table. Recreational Water Testing Laboratories Performance for 2013		
% Achievable	**Labs (n=15)**	**% Cumulative**
70	1	7
100	14	100

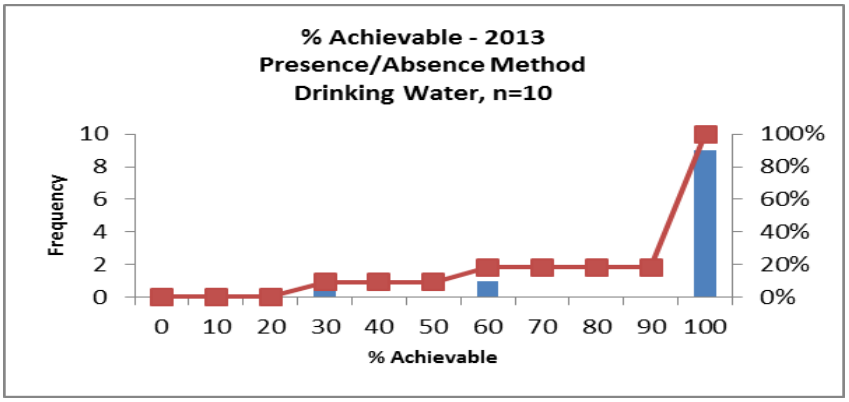


Most Probable Number (MPN) Method Score. Drinking Water Testing Laboratories Performance for 2013		
% Achievable	**Labs (n=6)**	**% Cumulative**
100	6	100



WATER MICROBIOLOGY PROGRAM

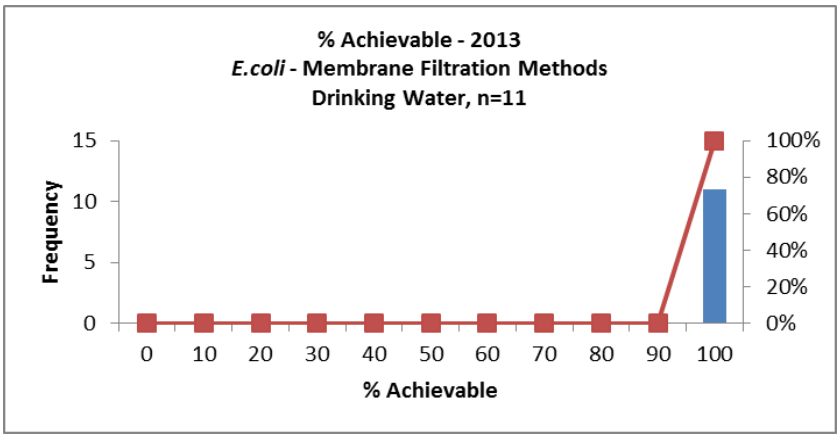
Presence/Absence Method Score Table. Water Testing Laboratories Performance for 2013		
% Achievable	Labs (n=11)	% Cumulative
30	1	9
60	1	18
100	9	100



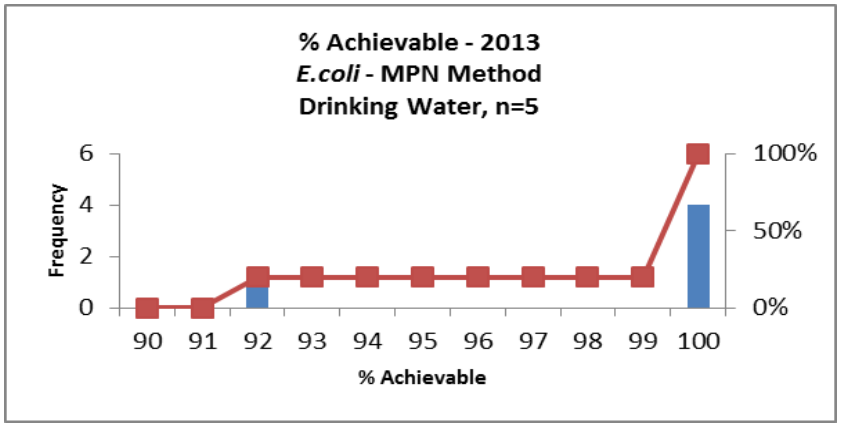
Water Microbiology - *E. coli* Supplemental Testing

A total of 15 laboratories (all methods) perform supplemental water bacteriology testing to discern *Escherichia coli* from other thermotolerant coliforms. These laboratories are assessed as a separate group and were assessed an additional 36 points maximum for the program year per method if they reported *Escherichia coli* and thermotolerant coliforms. The Membrane Filtration and the MPN methods were the primary methods used, however, one laboratory used the Enzyme Substrate method.

Membrane Filtration Method Score Table: *E.coli* Testing, 2013		
% Achievable	**Labs (n=11)**	**% Cumulative**
100	11	100



Most Probable Number Method Score Table: *E. coli* Testing, 2013		
% Achievable	**Labs (n=5)**	**% Cumulative**
92	1	20
100	4	100



MYCOLOGY PROGRAM

CMPT acknowledges with appreciation the valuable and essential advisory and technical support of:

Robert Rennie MD FRCPC……..University of Alberta Hospital, Edmonton, AB

Jeff Fuller FCCM, (D) ABMM…….……University of Alberta, Edmonton, AB

Romina Reyes MD FRCPC..……..LifeLabs, Burnaby, BC

Brad Jansen BSc, MLT……..University of Alberta Hospital, Edmonton, AB

Dermatophytes (Basic) Mycology Program

The Basic Mycology Program serves two constituent groups:

- British Columbia clinical dermatologists who perform mycology cultures in office laboratories.
- Microbiology laboratories that participate in this program to supplement other quality assurance programs to maintain proficiency in handling and identifying dermatology related fungi and yeasts.

For the past 24 years, CMPT has provided a **Dermatophytes (Basic) Mycology Program** for proficiency testing suitable for those doing office mycology and as a supplement for laboratories requiring a small number of additional challenges. The primary focus is the identification of dermatophytes and commonly recovered contaminants. In 2013-2014, CMPT added an additional fungal smear to the program. The four fungal isolates for 2013-2014 are listed in Table1.

Table 1 Basic Mycology Program Challenges 2013 - 2014

Survey		Sample		Fungal Smear /Identification Challenge
1309	Sept. 9, 2013	Fungal Smear	A	negative
			B	positive
			C*	negative
		1309-1		*Rhodotorula* species
		1309-2		*Microsporum gypseum*
1404	April 22, 2014	Fungal Smear	A	positive
			B	positive
		1404-1		*Candida albicans*
		1404-2		*Trichophyton mentagrophytes*

*an additional fungal smear was sent to compensate participants for a fungal smear sample that was ungraded in 2012-2013

MYCOLOGY PROGRAM

The Mycology Plus Program was introduced to participants in June 2001 and includes 12 proficiency challenges for dermatophytes, common laboratory contaminants, yeast identification and KOH slides. It is an extension to the Dermatophytes (Basic) Mycology Program and currently grades are not awarded. Susceptibility challenges for yeasts were introduced in 2008 and laboratories that perform anti-fungal testing were encouraged to report their results. In 2013-2014, CMPT added an additional fungal smear to the program.

The 2013-2014 challenges are noted in Table 2.

Survey		Fungal Smear			Yeast	Dermatophytes	Molds
		A	B	C	1	2	3
1309[a]	Sept. 9, 2013	negative	positive	negative	Wound swab *Rhodotorula* species	Skin Scraping *M. gypseum*	Sputum *Geotrichum* species
	Results	10* correct	10* correct	10* correct	*Rhodotorula* species (6)/ *rubra* (1)/ *mucilaginosa* (2)	*M. gypseum (6)/* species (1) *T.mentagrophytes* (1)	*Geotrichum* species (6)/ *candidum* (1) Yeast, not *Candida* species (1)
1401	January 20, 2014	negative	positive	positive	Blood Culture *C. glabrata*	Skin Scraping *M. cookei*	Environmental swab *Stachybotrys* species
	Results	9* correct 1 incorrect	10* correct	10* correct	*C. glabrata (9)* 4 laboratories performed susceptibilities	*M. cookei (5)/* species (1)/ *fulvum* (1) fungus, refer (1)	*Stachybotrys* species (7) snnp (2)
1404	April 22, 2014	positive	positive	negative	Throat swab *Candida albicans*	Skin Scraping *T. mentagrophytes*	Corneal Scraping *Fusarium* species
	Results	10* correct	10* correct	10* correct	*C.albicans* ± refer (8) *C.albicans/ C.dublinensis*, (1) 3 laboratories performed susceptibilities	*T.mentagrophytes (4)* *Trichophyton* species (3) *T. rubrum (1)* fungus isolated (1)	*Fusarium* species (9)

*an additional fungal smear was sent to compensate participants for a fungal smear sample that was ungraded in 2012-2013

[a] An extra sample was sent to compensate participants for a sample that was ungraded in 2012-2013. The sample was a simulated hand swab with *Alternaria* species. 9 laboratories reported *Alternaria* species

ENTERIC PARASITOLOGY PROGRAM

CMPT acknowledges with appreciation the essential advisory and technical support of:
Tara Bonham, RT……..LifeLabs, Surrey, BC
Romina Reyes MD FRCPC……..LifeLabs, Burnaby, BC
Joan Tomblin MD FRCPC……Royal Columbian Hospital, New Westminster, BC
Quantine Wong BSc……BCCDC/BCPHMRL, Vancouver, BC

Samples are supplied by McGill University Centre of Tropical Diseases, Montreal, Quebec, BC Life-Labs and BCCDC. The program consists of 3 surveys. Each survey consists of 3 SAF preserved samples requiring a total of 9 challenge readings that include 3 concentrates and 3 stained smears.

Grading is assessed on the combined results of the stained smear and the concentrate and is based on a 2 point scale (acceptable or unacceptable). Table 1 lists the samples and grades received for the 2013 challenges.

Table 1 - Enteric Parasitology Challenges 2013

Date	Sample	Parasite	Acceptable	Unacceptable	Ungraded
April 8, 2013	1304-1	***Strongyloides stercoralis***	23	0	0
	1304-2	***Blastocystis hominis,*** *Endolimax nana, Entamoeba coli*	21	2	0
	1304-3	***Diphyllobothrium latum, Blastocystis hominis,*** *Entamoeba coli, Entamoeba hartmanni*	22	1	0
July 8, 2013	1307-1	***Entamoeba histolytica/dispar, Blastocystis hominis,*** *Entamoeba hartmanni, Endolimax nana*	23	1	0
	1307-2	***Dientamoeba fragilis, Blastocystis hominis***	24	0	0
	1307-3	no ova and/or parasites seen	24	0	0
September 30, 2013	1310-1	no ova and/or parasites seen	23	1	0
	1310-2	***Cryptosporidium* species, *Blastocystis hominis***	23	1	0
	1310-3	***Giardia lamblia***	23	1	0
Total			**206**	**7**	**0**

Pathogens/potential pathogens in bold

TRICHOMONAS VAGINALIS ANTIGEN PROGRAM

CMPT launched the *Trichomonas vaginalis* Antigen Program with the first shipment on August 8, 2011. The program consisted of 2 surveys in 2011. The number of surveys increased to 3 in 2012. Each survey consists of 4 samples which are designed to be used with the Genzyme OSOM® *Trichomonas* Rapid Test Kit.

Grading is based on a 2 point scale (acceptable or unacceptable). Table 1 lists the samples and grades received for the 2013 challenges.

Table 1 - *Trichomonas vaginalis* Antigen Challenges 2013

Date	Sample	Results	Acceptable	Unacceptable	Ungraded
April 8, 2013	1304-1	positive	32	0	0
	1304-2	positive	32	0	0
	1304-3	negative	32	0	0
	1304-4	negative	32	0	0
July 8, 2013	1307-1	positive	32	0	0
	1307-2	negative	32	0	0
	1307-3	positive	32	0	0
	1307-4	negative	32	0	0
September 30, 2013	1310-1	negative	30	0	0
	1310-2	negative	30	0	0
	1310-3	positive	30	0	0
	1310-4	negative	30	0	0
Total			**376**	**0**	**0**

SHIGA TOXIN PROGRAM

CMPT launched the Shiga Toxin Program with the first shipment on May 7, 2012. The program consisted of 2 surveys in 2013. Each survey consists of 3 simulated stool samples.

Grading is based on a 2 point scale (acceptable or unacceptable). Table 1 lists the samples and grades received for the 2013 challenges.

CMPT acknowledges with appreciation the essential advisory and technical support of Denise Sitter, Cadham Provincial Laboratory, Winnipeg, MB.

Table 1 - Shiga Toxin Challenges 2013

Date	Sample	Results	Acceptable	Unacceptable	Ungraded
May 6, 2013	1305-1	gene and toxin positive	9	0	0
	1305-2	gene and toxin positive	9	0	0
	1304-3	gene and toxin negative	9	0	0
November 4, 2013	1311-1	gene and toxin negative	9	0	0
	1311-2	gene and toxin positive	9	0	0
	1311-3	gene and toxin negative	9	0	0
Total			**54**	**0**	**0**

MOLECULAR TESTING PROGRAM

CMPT launched the Molecular Proficiency Testing Program with the first shipment on March 23, 2009. The program consists of 2 surveys.

Each survey consists of 4 samples for methicillin-resistant *Staphylococcus aureus* (MRSA), vancomycin-resistant *Enterococcus* species (VRE) and group B streptococcus (GBS). Laboratories can participate in some or all of the 3 sample types.

Molecular Testing Grading Schemes

Grading is based on a 2 point scale (correct or incorrect). Table 1 lists the samples and grades received for the 2012 challenges.

Table 1 Molecular Challenges 2012

Date	Sample		Results	Correct	Incorrect	Ungraded/DNP
April 17, 2012	MRSA	MR1204-1	positive	3	0	0
		MR1204-2	negative	3	0	0
		MR1204-3	positive	3	0	0
		MR1204-4	negative	3	0	0
	VRE	V1204-1	positive	1	0	2
		V1204-2	negative	1	0	2
		V1204-3	positive	1	0	2
		V1204-4	positive	1	0	2
	GBS	GB1204-1	negative	1	0	2
		GB1204-2	negative	1	0	2
		GB1204-3	positive	1	0	2
		GB1204-4	positive	1	0	2
August 14, 2012	MRSA	MR1204-1	negative	2	0	0
		MR1204-2	negative	2	0	0
		MR1204-3	positive	2	0	0
		MR1204-4	positive	2	0	0
	VRE	V1204-1	positive	1	0	1
		V1204-2	negative	1	0	1
		V1204-3	positive	1	0	1
		V1204-4	negative	1	0	1
	GBS	GB1204-1	negative	1	0	1
		GB1204-2	positive	1	0	1
		GB1204-3	positive	1	0	1
		GB1204-4	negative	1	0	1
Total				**36**	**0**	**16**

DNP: did not participate

2012 - 2013 CMPT PROGRAMS' PARTICIPANTS

Clinical Bacteriology - Distribution of Participant Laboratories

Province / Territory	Joined in	A	B	C	C1	Total
Alberta	1992	15		2	1	**18**
British Columbia	1982	22	3	1	20	**46**
Manitoba	2001	13	2		1	**16**
New Brunswick	1993	4	1			**5**
Newfoundland and Labrador	1997	1				**1**
Nova Scotia	1993	9	1			**10**
Northwest Territories	1992	1				**1**
Ontario	2004	1	1			**2**
Prince Edward Island	1993	2				**2**
Saskatchewan	1996	12	3	5		**20**
Yukon	1992	1				**1**
Total		**81**	**11**	**8**	**22**	**122**